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**COST ACCOUNTING IN THE OPERATION AND  
MAINTENANCE OF MILITARY FAMILY HOUSING**

**MARTIN E. FARMER**

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**COST ACCOUNTING**

**IN THE OPERATION AND**

**MAINTENANCE OF MILITARY FAMILY HOUSING**

by

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**Bachelor of Science**  
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of Government, Business and International  
Affairs of the George Washington Uni-  
versity in partial satisfaction of  
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of Master of Business  
Administration**

**June 1964**

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PREFACE

During my four year tour of duty as the Head of Housing Management Branch, Facilities and Services Division, Supply Department, Headquarters U. S. Marine Corps, I participated in the growth of the Military Family Housing Program from a relatively small dispersed portion of the overall Military Facilities Program to a full fledged program in its own right, with strong emphasis on centralized control and program management. As in the case with most new programs or organizations, the Family Housing Program is still experiencing "growing pains." While there are still a few aches remaining in the areas of determination of requirements, programming new housing, and assignment and utilization of existing housing, the area that offers the greatest potential development and refinement is that concerned with housing operation and maintenance. The objective of this paper is to study the accounting system created to provide housing program managers with the operation and maintenance cost data so essential to accurate performance evaluation. It is hoped that this paper can make a positive contribution to the improvement of the accounting system.

I wish to express my appreciation to the Deputy Assistant Secretary of Defense (Family Housing), Mr. John J. Reed, and his staff, and to Mr. Joseph West, Cdr. William D. Stephenson and Mr. John Ward of the Army, Navy and Air Force respectively, for their willing and gracious assistance in permitting me to use of their time and documents. I hope my effort proves worthy of their assistance.



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## CHAPTER I

### INTRODUCTION

In the early years of this country's existence family housing for military personnel was not a significant problem. Standing military forces were small and only a small percentage of servicemen were married. The commanding officer of an installation usually had his house and some quarters were built for other senior officers and top ranking enlisted men. The first formal recognition that there was a family housing requirement for military people came in 1866 when the Secretary of the Navy, Gideon Wells, issued General Order No. 75 providing, ". . . from and after the first day of June proximo, officers who are not provided with quarters on shore stations will be allowed a sum equal to 33 1/3% of their pay."<sup>1</sup> The Army and Navy subsequently issued a number of regulations on the subject of housing allowances and certain legislative acts were passed on the matter. During this period on-post quarters construction continued to be sporadic and rather infrequent. In some cases this construction consisted of providing tools and materials to the prospective quarters occupant and telling him to build his own house.<sup>2</sup>

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<sup>1</sup>Appendix to the Report of the Advisory Panel on Military Family Housing Policies and Practices of 15 November 1961.

<sup>2</sup>There are still a few quarters, built in this fashion, at Marine Corps Schools, Quantico, Virginia that are now in use.



Family housing assets remained a relatively minor portion of the military facilities inventory up through World War II. During World War II Congress authorized the Public Housing Administration and the military departments to construct a large number of temporary, low cost housing units to house both civilian workers and military dependents.<sup>3</sup> There was little construction of family housing immediately following World War II, partly because of the uncertainty of the nation's long range military plans and partly due to the existence of the previously mentioned temporary housing assets. Most of the funds Congress did appropriate during this period were for the conversion of some of the temporary assets into adequate public quarters.

The first real step toward obtaining a significant number of family housing units for military personnel was the enactment of the "Wherry" Act.<sup>4</sup> This Act authorized privately financed housing projects to be built on government-owned land located on or near military installations. The land was leased to a civilian project sponsor who undertook to organize a mortgagor corporation to finance, build, maintain and operate the projects. The housing units were made available on a rental basis to military and civilian tenants designated by the local base commander. Wherry mortgages were generally limited to \$8,100 per unit. A total of 268 Wherry projects were built for the military departments, comprising a total of 83,742 units.<sup>5</sup>

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<sup>3</sup>Authorization was contained in Public Law 76-849 (known as the Lanham Act) enacted 14 October 1940, and Public Law 76-671, enacted 28 June 1940.

<sup>4</sup>Public Law 81-211, enacted 8 August 1949. This act became known as "The Wherry Act" and housing constructed under its provisions was and still is commonly referred to as "Wherry Housing."

<sup>5</sup>Appendix to the Report of the Advisory Panel, op. cit.



The importance of military family housing received formal recognition in 1950 when the President directed the Secretary of Defense to organize the Defense Housing Commission to study the problem. As a result of the Commission's study the Armed Forces Housing Agency was established and assigned responsibility for all aspects, except fiscal, of the family housing program. The director of this agency held the title of assistant to the Secretary of Defense. The Armed Forces Housing Agency made some progress in providing the basis for determining housing requirements but the agency was abolished by reorganization Plan No. 6 in 1953 and its functions transferred to the Assistant Secretary of Defense (Properties and Installations).<sup>6</sup> The work of the Housing Agency and subsequently of the Office of the Assistant Secretary of Defense (P&I) resulted in the passage of a Department of Defense housing bill, in 1954, which marked the beginning of an appropriated fund housing program of major significance. This bill and the following bills for fiscal years 1956 and 1957 authorized the construction of 32,339 housing units, of which only about 18,000 were funded and built.<sup>7</sup>

The reason that the actual construction of units fell short of the number authorized was partially a result of Congress' peculiar habit of authorizing a given number of units while funding only a portion of those authorized, and partially due to certain projects being reviewed to

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<sup>6</sup>The title of this official was subsequently changed to the Assistant Secretary of Defense (Installations & Logistics).

<sup>7</sup>Appendix to the Report of the Advisory Panel, op. cit.



see if they could be developed more suitably under the newly enacted Capehart legislation.

By 1955 increasing construction costs and legislative enactments made it impossible for prospective Wherry sponsors to obtain mortgage funds. The result was the termination of the Wherry program. A successor program was created by the Capehart Act.<sup>8</sup> This legislation was similar to Wherry legislation in that it provided for housing projects to be constructed on government-owned property by private contractors through the use of mortgage money. Here the similarity ended with the Capehart Act containing the following new provisions: (1) FHA insurance of 100% of the mortgages involved, whereas Wherry mortgages were insured for only 90% (2) the sponsoring military department acquired the units upon completion, maintained, operated, and made mortgage payments on them, and assigned the units to military personnel as public quarters<sup>9</sup> (3) the military department exercised final approval on housing design and had some measure of control over the contractor during the construction period and (4) the average per unit construction cost limit was set at \$16,500, with an additional amount of appropriated funds (not to exceed \$1,500 per unit) authorized for site acquisition, rough site improvements and off site utilities. An additional

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<sup>8</sup>Title IV of the Housing Amendments of 1955 (Public Law 84-345, approved 11 August 1955). Housing built under this authority naturally became known as "Capehart Housing."

<sup>9</sup>Public quarters are housing units owned or leased by the government for which the military occupant forfeits his basic allowance for quarters. Rental housing is housing, either civilian or government-owned, for which the occupant pays a stipulated rental fee. The military quarters allowance is paid to the individual and it matters not whether the rent is more or less than the allowance.





facet of the Capehart program was that the government was required to acquire, through purchase from the civilian owners, all Wherry projects at installations where Capehart projects were constructed. This action resulted from fear on part of the Wherry housing owners that the new Capehart housing would adversely affect Wherry occupancy and result in reduced income.

The Capehart housing program provided a far superior house than did the Wherry program. Capehart units were larger, better constructed, and better designed. A substantial number of 4 bedroom units were built in recognition of the growing size of military families. By July of 1963, a total of 110,799 Capehart units had been completed with 4,064 additional units due for completion during fiscal year 1964.<sup>10</sup>

In 1962 the Capehart program came to an end as Congress failed to renew the legislation for a number of reasons which are not pertinent to this paper.

With the end of mortgage financing for military housing, emphasis shifted to direct appropriated funds as a means to obtain needed units. Family housing faces many obstacles in competing with other military requirements for appropriated funds as its contribution to the defense effort is not as clearly defined as are the contributions of Polaris submarines, aircraft and ground combat units. Nevertheless, family housing contributes to the defense effort in terms of service morale and in helping to retain trained leaders and technicians for a full military career.

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<sup>10</sup>U. S. Congress, House of Representatives, Subcommittee on the Committee on Appropriations, Hearings on Military Construction Appropriations for 1964, 88th Congress, 1st Session, 1963.



The importance of the military family housing program has been recognized by the Department of Defense as evidenced by the inclusion of 62,100 units of appropriated fund housing into the Department of Defense Five Year Force Structure and Financial Program for fiscal years 1964-1968.

There are a number of other housing programs that have provided various types of housing to meet specific needs, both overseas and within the continental limits of the United States, but their contribution is relatively minor compared to the Wherry, Capehart and appropriated fund programs. A description of these programs here would not further the interests of this paper however, a brief description of each program is included as Appendix I.

As a result of the various construction programs, the military family housing inventory had grown to about 325,000<sup>11</sup> adequate units by the end of 1960. Despite this large number of existing assets, there was still a significant requirement in the services for additional units, indicating that construction had not kept pace with demand. The reason for this large, unfulfilled requirement was well stated by the Secretary of Defense as follows:

". . . The scope of the housing problem, however, has increased enormously, especially since the Korean War when the United States for the first time in its history decided to maintain a large military establishment in peacetime.

The problem has been further complicated by the marked changes in our military personnel structure which have been taking place since World War II. Whereas prior to World War II,

---

<sup>11</sup>Figure includes all authorized Capehart units under construction and all Wherry units pending acquisition.

The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in the financial management of the organization. The text also mentions the role of the board of directors in overseeing these operations and ensuring that the organization's resources are used effectively and efficiently.

In addition, the document outlines the various methods used to collect and analyze financial data. This includes the use of accounting systems, budgeting, and financial reporting. The text highlights the importance of regular audits and reviews to identify any discrepancies or areas for improvement. It also discusses the role of external auditors in providing an independent assessment of the organization's financial health and compliance with applicable laws and regulations.

The document further details the organization's financial goals and objectives for the upcoming period. It sets out a clear plan for increasing revenue, reducing costs, and improving overall financial performance. The text also addresses the organization's risk management strategy, including the identification of potential risks and the implementation of measures to mitigate them. Finally, the document concludes with a summary of the key findings and recommendations, and a call to action for all stakeholders to work together to achieve the organization's financial success.

Approved by the Board of Directors on this 15th day of January, 2024.  
Signature of the Chairman of the Board  
Signature of the Treasurer

single men constituted 70 to 75 per cent of the peacetime military establishment, today 50.2 per cent of our active duty male personnel are married and these married men constitute the bulk of our career personnel. These are the men who occupy the key positions and who possess the professional leadership and technical skills essential to a modern military establishment.

Not only has the proportion of married men risen in recent years, but the average size of their families has also increased significantly and today closely approximates that of the civilian population. Indeed, the number of military families with three or more children has more than doubled in the last five years."<sup>12</sup>

In 1961, while the services were clamoring for additional housing, the Bureau of the Budget, General Accounting Office, and Congress were leveling a great amount of criticism at the military family housing program. Some of this criticism concerned the overstatement of housing requirements by the military departments, to the extent that projects were requested at installations where the surrounding community could provide adequate housing support, and the disregard of statutory construction cost limits.

However, a great part of the criticism was aimed at financial management, or rather, the lack of it. The situation that led up to this criticism was essentially that, while the housing inventory had increased substantially since 1950, housing management had not advanced proportionally. Inventory figures were not reliable, cost data were practically non-existent, and there was little, if any, centralized guidance on program

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<sup>12</sup>Contained in Congressional testimony of Secretary of Defense, Robert S. McNamara, before the Military Construction Subcommittee of the House Appropriations Committee on 31 October 1963.



management provided by the Office of the Secretary of Defense or the military departmental headquarters.<sup>13</sup>

In response to the varied criticisms levied at the housing program, the Secretary of Defense, on 23 September 1961, established the Advisory Panel on Military Family Housing Policies and Practices.<sup>14</sup> The Advisory Panel was assigned the mission of conducting an intensive reappraisal of existing policies and criteria governing military family housing and reporting its findings to the Secretary of Defense within a two month period. The specific objectives developed by the panel are shown on Exhibit I.

On 15 November 1961, the Advisory Panel recommended that the Secretary of Defense accomplish the following:

1. The adoption of a uniform family housing program within the three military departments.
2. The establishment, within the Office of the Secretary of Defense, of a Military Family Housing Office responsible for all aspects of the family housing program and exercising management control over the military family housing program.
3. The establishment of Defense Family Housing Management Fund as the financial management vehicle within which both the financing of

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<sup>13</sup>The single exception to the lack of centralized guidance was found with the Navy which, in 1960, assigned management control of Navy housing to the Bureau of Yards and Docks.

<sup>14</sup>Secretary of Defense memorandum to the Secretaries of the Military Departments and others of 23 September 1961.





## Exhibit 1

SPECIFIC OBJECTIVES DEVELOPED BY THE ADVISORY PANEL ON  
MILITARY FAMILY HOUSING POLICIES AND PRACTICES

- To better develop, identify and defend requirements.
- To provide improved administration, management and program control.
- To provide cost accounting data and fiscal control.
- To provide adequate and workable financing routes for a Defense Family Housing program.
- To achieve more uniform standards in all phases of the program.
- To minimize disparity between military family housing and its civilian counterpart.
- To prudently utilize available funds and achieve economies of operation.
- To produce uniform procedures with respect to management, construction, and operation and maintenance.
- To recognize and accomodate the vital command relationship to family housing.



construction and operation and maintenance of family housing will be administered.<sup>15</sup>

This paper is concerned with the Panel's recommendation dealing with financial matters. The Panel, after studying this area in depth, determined that a complex pattern of appropriations, funds and accounts existed to support the housing program; and further, that family housing costs were buried in multi-billion dollar appropriation estimates for military pay and operation and maintenance.

After reviewing the Advisory Panel's recommendations, the Secretary of Defense took the following steps:

1. Established the Office of the Deputy Assistant Secretary of Defense (Family Housing) to provide centralized policy direction from the Department of Defense level.<sup>16</sup>
2. Directed that the Military Departments establish a centralized organization for the management of their housing programs.<sup>17</sup>
3. Obtained approval from Congress for the creation of a Department of Defense Housing Management Account for control of all funds pertinent to the family housing program. This Management Account differed from the Advisory Panel's Management Fund; the former being a consolidation of monies that appeared previously in departmental appropriations into one

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<sup>15</sup>Report of the Advisory Panel on Military Family Housing Policies and Practices of 15 November 1961.

<sup>16</sup>Implementation effected on 7 December 1961 by memorandum from the Secretary of Defense to the Secretaries of the Army, Navy, and Air Force.

<sup>17</sup>Ibid.



overall appropriation whereas the latter contemplated a revolving fund with income accruing outside the appropriation channel.

4. Directed the establishment of a Department of Defense-wide uniform cost accounting system for the accumulation of operation and maintenance costs. This was to clearly identify all costs on a basis which would permit accurate comparison between military departments.

The interest of this paper centers about item 4 in the above list; the uniform cost accounting system. The fact that a uniform cost accounting system has been established and is being used in the Department of Defense does not automatically solve all problems. It is necessary to answer such questions as:

1. Is the cost data actually collected on the basis of uniform criteria?
2. Of what value is the cost data collected and how or for what purpose is the data used?
3. Is the cost data collected and reported in such a way as to facilitate its use for management and budgetary purposes?

In an attempt to answer the above questions, Chapter II of this paper will examine the cost accounting system, Chapter III will discuss how the data obtained from it are used and should be used, and Chapter IV will consider the application of automatic data processing to the cost collection and reporting system in the light of improving its usefulness to management.

Research for this thesis consisted of interviews with personnel in the Office of the Deputy Assistant Secretary of Defense (Family Housing),



Bureau of the Budget, and the military departmental headquarters; studying the various directives and instructions issued by the Office of the Secretary of Defense and the military departments; and reviewing such other books and documents as are listed in the bibliography.





## CHAPTER II

### COST ACCOUNTING PROCEDURES FOR MILITARY

#### FAMILY HOUSING

##### Development of the Cost Accounting System

As indicated in the Introduction, the Advisory Panel's recommendation concerning financial management led the Secretary of Defense to seek the development of a uniform cost accounting system for operation and maintenance costs. In order to determine the proper cost criteria upon which to base the cost accounting system, the Assistant Secretary of Defense (Installations and Logistics) informally established the Family Housing Task Force on Uniform Cost Criteria. This task force, consisting of one representative from each military department and one representative from the Office of the Assistant Secretary of Defense (Comptroller), was given the job of establishing uniform family housing operation and maintenance cost criteria which would provide the basis for development of cost data required for the effective management of family housing. The specific objectives to be attained from the adoption of uniform cost criteria were:

1. A cost system based upon uniform Operation and Maintenance of family housing cost criteria which, within the limitations of its usefulness, will provide a valid basis for comparison.



2. A cost system which will be responsive to the production of significant and timely data, with a capability for breakout of summary data (flexibility).

3. A cost system which will record and produce a report on the total costs incurred.

4. A cost system based upon actual costs incurred including certain cost factors which can be economically and feasibly collected only on the basis of engineering analysis.

5. A cost system based upon the foregoing objectives which will minimize the revision of existing cost and maintenance management systems.<sup>1</sup>

It is important to note that this group devoted its efforts toward the determination of the types or classifications of costs to be gathered, rather than to the means by which the costs were to be collected. As indicated by objective 5 above, it was the intent of the task force to work within the existing cost collection procedures and systems, where possible.

The task force, in viewing the need to identify total operation and maintenance costs, recognized that consideration had to be given to the various kinds of primary or direct costs and the various kinds of secondary or indirect costs. Primary costs, such as structural maintenance and utilities consumed, can be immediately and specifically identified as relating to the function of operation and maintenance of family housing,

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<sup>1</sup>U. S. Department of Defense, Family Housing Task Force Report on Uniform Cost Criteria, February 1962, Office of the Assistant Secretary Defense (Installations and Logistics).



whereas, secondary costs, by their nature, are elusive, difficult to identify and subject to manipulation.<sup>2</sup> The task force explored the area of secondary costs such as fire and police protection furnished to family housing and general overhead at the installation level. The conclusion was that such secondary costs are not valid unless they can be identified with a specific program or activity; for instance, establishing a new fire station for a relatively isolated housing project. The task force further concluded that proration of secondary costs of an installation wide nature would distort the true and valid costs.

The task force on criteria, in its report to the Secretary of Defense in early February 1962, made a number of significant recommendations which require comment.

The first recommendation was that total costs should be collected and reported in seven (7) principle cost classifications. Within some of these classifications, costs were to be broken down into certain sub-classifications. In determining the cost classifications, the task force had to consider the level of detailed costs required for management and budgetary purposes. The greater the detail, the greater the administrative costs involved in providing it; so, the task force had to determine the minimum detail required. The cost classifications recommended were designed to identify all of the significant functions performed in the operation and maintenance of family housing. These classifications are shown on Exhibit 2.

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<sup>2</sup>Such manipulation could take the form of charging either the housing or regular station (non-housing) Operation and Maintenance appropriation for an undue amount of overhead costs should either appropriation have a deficiency of funds.



## Exhibit 2

FAMILY HOUSING COST CLASSIFICATIONS RECOMMENDED  
BY THE FAMILY HOUSING TASK FORCE ON UNIFORM  
COST CRITERIA

1. Administration
2. Maintenance and Repair, Dwelling Unit
  - Structure
  - Painting
  - Interior Utilities
3. Maintenance and Repair, Other Property
  - Exterior Utilities
  - Grounds
  - Surfaced Areas
  - Other
4. Services
  - Refuse Collection and Disposal
  - Fire Protection
  - Police Protection
  - Other
5. Utility Operations
  - Electricity
  - Gas
  - Fuel Oil
  - Water
  - Sewage
  - Other
6. Furniture and Equipment
  - a. Furniture
    - Maintenance and Repair
    - Handling and Storage
    - Replacement (to housing inventory)
  - b. Equipment
    - Maintenance and Repair
    - Handling and Storage
    - Replacement (to housing inventory)
7. Construction and Alterations.





The next recommendation was that family housing operation and maintenance costs be reported by four (4) inventory categories. Again the requirement was to determine the amount of detail needed. As can be seen from Appendix I, there are numerous types of housing, each constructed through different programs. To collect and report costs by each type would impose a heavy administrative workload at the installation level. The task force decided that the following four categories sufficient data:

1. Encumbered housing (Capehart and Wherry).
2. Inadequate public quarters and rental housing.
3. Appropriated fund quarters (only those built after 1950).
4. All other (includes appropriated fund housing built prior to 1950).

Other significant recommendations were that performance factors be based upon the number of housing units and the square feet of floor space and that an annual report be submitted to the Secretary of Defense in the format shown as Appendix II. The report format prescribed the manner in which costs would be reported in terms of labor, material and contract charges as indicated by Appendix II.

Shortly before the task force on criteria submitted its report, the Assistant Secretary of Defense (Comptroller) established a second study group called the Family Housing Task Force on Uniform Cost Accounting. The task force on accounting used the criteria developed by the first group as a starting point.<sup>3</sup> The primary function of the second task force was

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<sup>3</sup>It is worth noting that the first task force was management oriented whereas the second was accounting oriented.



to develop proposals for each military department which would enable housing costs to be accumulated through maximum use of existing accounting and reporting systems, thereby resulting in a minimum impact on existing procedures and organizations.

The report of the task force on accounting, submitted in March 1962, recommended that the military departments submit semi-annual cost reports to the Secretary of Defense, containing the information shown on Appendix II, in the four housing categories and seven cost classifications previously mentioned. The task force on accounting also amplified and clarified the detailed definitions, initially developed by the task force on criteria, concerning the cost components applicable to each cost classification and recommended that these improved definitions be used by the military departments to provide a uniform basis for cost collection. Excerpts from the complete list of detailed definitions are contained in Appendix III to show the type and nature of these definitions.

The task force on accounting also recommended that certain changes be made to the military departmental accounting systems to provide for the collection and recording of housing costs.<sup>4</sup> The recommended changes will not be discussed as such, rather, a description of the accounting systems now in use by the military departments to collect housing costs will be presented.

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<sup>4</sup>The recommendations of the task force on uniform cost accounting was approved by the Secretary of Defense and the military departments were directed to comply with its provisions by the Assistant Secretary of Defense (Comptroller) memorandum of 17 March 1962.

The first part of the document discusses the general principles of the project and the objectives to be achieved. It also mentions the names of the participants and the dates of the meetings.

The second part of the document describes the progress made during the first meeting. It details the discussions held and the decisions taken. It also mentions the tasks assigned to the participants and the deadlines for their completion.

The third part of the document describes the progress made during the second meeting. It details the discussions held and the decisions taken. It also mentions the tasks assigned to the participants and the deadlines for their completion.

The fourth part of the document describes the progress made during the third meeting. It details the discussions held and the decisions taken. It also mentions the tasks assigned to the participants and the deadlines for their completion.

The fifth part of the document describes the progress made during the fourth meeting. It details the discussions held and the decisions taken. It also mentions the tasks assigned to the participants and the deadlines for their completion.

Cost Accounting in the Air Force

Air Force Manual 170-5, the cost accounting "Bible" in the Department of the Air Force, indicates that the Air Force operates an accrual accounting system for the costs of operation and maintenance of facilities. The first paragraph in Chapter 2 of this manual contains the following:

"This cost accounting system, established in consonance with Public Law 82-216 and DOD Directive 4150.9, provides for the accumulation of costs accrued in the operation, maintenance, alteration, and minor new construction of Air Force real property facilities . . . .

. . . The system is designed to segregate costs by major elements; arrange these costs by control accounts, sub-control accounts, and detailed accounts and; to enhance industrial engineering analysis of operation and maintenance management at all levels of command but more particularly at the operating level."<sup>5</sup>

The concept put forth in the above excerpt is amplified in great detail in subsequent portions of the manual with specific instructions given for determining accrued costs for labor, material, services (utilities) and contractual work. Provision is made for engineered estimates to determine costs for unbilled services and incomplete contracts.<sup>6</sup>

Cost control for operations and maintenance is achieved through the use of the below listed six control accounts. An additional control account is provided for construction funds.

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<sup>5</sup>U. S. Department of the Air Force, AFM 170-5C, paragraph 10201, p. 2-1.

<sup>6</sup>Ibid., Chapter 3.

THE HISTORY OF THE UNITED STATES

The first part of the book is devoted to a general survey of the history of the United States from its origin to the present time. It is divided into three main periods: the colonial period, the revolutionary period, and the national period. The colonial period is characterized by the struggle for independence from Great Britain. The revolutionary period is marked by the adoption of the Declaration of Independence and the Constitution. The national period is characterized by the expansion of the United States across the continent and the development of a strong national government.

The second part of the book is devoted to a detailed account of the events of the American Revolution. It begins with the outbreak of hostilities in 1775 and continues through the signing of the Treaty of Paris in 1783. It covers the military campaigns, the political struggles, and the social changes that took place during this period.

The third part of the book is devoted to a detailed account of the events of the American Civil War. It begins with the outbreak of hostilities in 1861 and continues through the signing of the Emancipation Proclamation in 1863 and the final surrender of the Confederacy in 1865. It covers the military campaigns, the political struggles, and the social changes that took place during this period.

The fourth part of the book is devoted to a detailed account of the events of the American Reconstruction period. It begins with the end of the Civil War in 1865 and continues through the Reconstruction era in the 1870s. It covers the political struggles, the social changes, and the economic development that took place during this period.

The fifth part of the book is devoted to a detailed account of the events of the American Progressive Era. It begins with the late 19th century and continues through the early 20th century. It covers the political reforms, the social changes, and the economic development that took place during this period.

<u>Control Account Number</u>	<u>Title</u>
X1	Management and Engineering
X2	Utilities Operations
X3	Fire Protection Operations
X4	Services
X5	Facilities Maintenance
X6	Indirect Costs

Costs are accumulated within each control account by means of a series of five digit account numbers which identify costs according to end use. The Air Force account numbers perform a function similar to that performed by the Navy's Expenditure Account Numbers. Navy EAN's will be discussed later in this paper.

Exhibit 3 shows a few examples of some of the control account numbers under control accounts X2 and X5 which will help to describe the function of control account numbers.<sup>7</sup>

For the most part the control accounts provide cost data on an installation-wide basis which does not produce a sufficient breakdown to meet Department of Defense requirements for housing costs. In order to provide required housing category cost classification, prefix codes, to identify the housing category, and special account numbers, to identify the cost classification, are used. The prefix codes range from 1 to 6 and identify encumbered, inadequate and rental, appropriated fund, other,

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<sup>7</sup>Ibid., Chapter 2.

Account	Amount
General Fund	100
Special Fund	50
Reserve Fund	25
Operating Fund	15
Capital Fund	10

The following is a list of the accounts which are included in the general fund. The amount of each account is shown in the column headed "Amount". The total amount of the general fund is \$190.

The following is a list of the accounts which are included in the special fund. The amount of each account is shown in the column headed "Amount". The total amount of the special fund is \$50.

The following is a list of the accounts which are included in the reserve fund. The amount of each account is shown in the column headed "Amount". The total amount of the reserve fund is \$25.

The following is a list of the accounts which are included in the operating fund. The amount of each account is shown in the column headed "Amount". The total amount of the operating fund is \$15.

The following is a list of the accounts which are included in the capital fund. The amount of each account is shown in the column headed "Amount". The total amount of the capital fund is \$10.



## Exhibit 3

REPRESENTATIVE EXAMPLES OF AIR FORCE  
CONTROL ACCOUNT NUMBERS

<u>Account Number</u>	<u>Description</u>
X2	
20531	Purchased Water
20532	Purchased Electricity
20539	Purchased Steam Cost of steam and hot water purchased
X5	
51411	Buildings, Permanent-Int Operational for all permanent buildings included in Real Property Code 1411.
54401	Buildings, Permanent-Storage for all permanent buildings included in Real Property Codes 411 and 4421.
57111	Buildings, Permanent-Family Housing for all permanent and family housing buildings included in Real Property Codes 7111 and 7141.
57120	Family Housing-Trailers for all govern- ment-owned trailers included in Real Property Code 7120.
58330	Refuse and Garbage disposal facilities for all facilities included in Real Property Code 8330.

Table 1

Summary of the results of the analysis of variance

Source of variation	D.F.	Mean square	F-value	Significance
Between groups	3	12.5	1.5	0.25
Within groups	12	8.3		
Total	15			
Between groups	3	12.5	1.5	0.25
Within groups	12	8.3		
Total	15			
Between groups	3	12.5	1.5	0.25
Within groups	12	8.3		
Total	15			
Between groups	3	12.5	1.5	0.25
Within groups	12	8.3		
Total	15			

leased and surplus commodity housing respectively.<sup>8</sup> The housing account numbers were designed to follow sequentially the Department of Defense cost classifications shown on Exhibit 1. Account number 100 is for administration; 200 is for Maintenance and Repair, Family Housing Unit; 300 is for Maintenance and Repair, Other Real Property; and so on through 700 for Construction and Alterations. Each primary account has sub-account numbers such as 201 . . . 204, 301 . . . 303, etc., to collect costs for sub-classifications.

While the use of only the one digit prefix codes and the three digit housing account numbers would provide the data necessary to meet Department of Defense requirements for housing cost reports, the Air Force has requirement to feed housing costs into the overall facilities cost accounting system. In order to do this the Air Force employs a dual coding system. To illustrate, cost account code 1.202 57111 indicates costs for painting of encumbered housing (1.202) and costs of maintenance performed on Buildings, Permanent Family Housing (57111). The last five digit number provides the means of entry into the overall Air Force accounting system.

A significant feature of the Air Force cost system for family housing is the adaptability of the housing account number structure to Electric Accounting Machine of Automatic Data Processing techniques. What the Air Force has, in effect, is a department-wide standard job order structure which permits costs at all installations to be identified

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<sup>8</sup>The Air Force collects costs separately for Leased and Surplus Commodity housing although not required to do so by the Department of Defense.

There are several reasons for this. First, the

second is that the

third is that the

fourth is that the

fifth is that the

sixth is that the

seventh is that the

eighth is that the

ninth is that the

tenth is that the

eleventh is that the

twelfth is that the

thirteenth is that the

fourteenth is that the

fifteenth is that the

sixteenth is that the

seventeenth is that the

eighteenth is that the

nineteenth is that the

twentieth is that the

twenty-first is that the

twenty-second is that the

twenty-third is that the

twenty-fourth is that the

twenty-fifth is that the

twenty-sixth is that the

twenty-seventh is that the

twenty-eighth is that the

according to the same numbered classifications. The application of data processing to the collection and reporting of housing costs will be treated in Chapter IV of this paper.

Cost Accounting in the Army

The Army also maintains an accrual accounting system for the collection of facilities operation and maintenance costs. According to Army Regulation 37-108:

These regulations prescribe an integrated system of procedures and records to account for and report on:

.....

- (3) The administration and status of operating programs and budgets on an accrued expenditure and cost basis (program cost accounting).<sup>9</sup>

The Army cost account structure for facilities is based upon an eight digit account number which is capable of providing costs on a detailed level.<sup>10</sup> In order to provide the housing costs required by the Department of Defense, the Army added a complete new series, the 1900.0000 series, to the existing account structure.<sup>11</sup> Exhibit 4, showing the numbers assigned to encumbered housing, is illustrative of the nature of the account structure and the level of detail in which costs are collected.

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<sup>9</sup>U. S. Department of the Army, AR 37-108, paragraph 1-4, p. 1-1.

<sup>10</sup>U. S. Department of the Army, AR 1-11-4.

<sup>11</sup>Ibid., p. 37.

and in addition the...  
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## Exhibit 4

ARMY COST ACCOUNT CODE STRUCTURE FOR  
MILITARY FAMILY HOUSING

<u>Code</u>	<u>Activity</u>
1900.0000	Operation and Maintenance, Military Family Housing
1910.0000	Operations
1910.1000	Encumbered Housing
1910.1100	Administration
1910.1200	Services
1910.1210	Refuse Collection and Disposal
1910.1220	Fire Protection
1910.1230	Police Protection
1910.1240	Other Services
1910.1241	Insect and Rodent Control
1910.1242	Custodial Services
1910.1243	Snow Removal
1910.1300	Utility Operations
1910.1310	Electricity
1910.1320	Gas
1910.1330	Fuel Oil
1910.1340	Water
1910.1350	Sewage
1910.1360	Other





## Exhibit 4 (continued)

<u>Code</u>	<u>Activity</u>
1910.1400	Furniture and Furnishings
1910.1410	Maintenance and Repair
1910.1420	Handling and Storage
1910.1430	Initial Issue
1910.1440	Replacement
1910.1500	Equipment Handling and Storage
1910.2000	Substandard Family Housing <sup>a</sup>
. . . . .	. . . . .
1920.0000	Maintenance of Real Property Facilities
1920.1000	Encumbered Housing
1920.1100	Maintenance and Repair, Dwelling Units
1920.1110	Structures
1920.1120	Painting
1920.1130	Interior Utilities
1920.1140	Movable Equipment
1920.1141	Maintenance and Repair
1920.1142	Replacement
1920.1200	Maintenance and Repair, Other Real Property
1920.1210	Exterior Utilities
1920.1220	Grounds



Exhibit 4 (continued)

<u>Code</u>	<u>Activity</u>
1920.1230	Surfaced Areas
1920.1240	Miscellaneous Facilities
1920.1300	Addition-Expansions-Extensions and Alterations
1920.1310	Dwelling Units
1920.1320	Other Real Property
1920.2000	Substandard Family Housing <sup>a</sup>
.....	.....

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<sup>a</sup>The same as Inadequate Public Quarters and Rental Housing.

## Table 1 (continued)

Variable	Mean
Age	35.2
Gender	50.1
Education	12.5
Income	25,000
Health	75.0
Marital status	65.0
Employment	70.0
Home ownership	60.0
Life satisfaction	70.0
...	...

Each housing category has a separate series of numbers for cost collection with the breakdown of costs being identical to those shown for Encumbered Housing. A comparison of Exhibit 2 with Exhibit 4 shows that the Army cost classifications are comparable to those established by the Department of Defense, except that the Army provides greater detail in some areas.

It is apparent that the Army account structure is ideal for a mechanized or computerized accounting system. The problem encountered by the Air Force of tying in housing costs to the overall accounting system did not occur for the Army for the housing series of accounts is an integral part of the overall accounting system, thus precluding the need for dual coding.

#### Cost Accounting in the Department of the Navy<sup>12</sup>

The cost accounting system established for family housing by Navy Comptroller Instruction 11101.7A is not based upon accrued costs. The instruction specifically states; "It is not the intent of this instruction to establish an accrual accounting system solely to record costs in the area of family housing operations." However, the instruction defines costs as amounts paid or payable for material consumed or services received applicable to a given reporting period and requires that the value of resources applied for expenditures, which have not been recorded as of the end of one reporting period, will be computed on the

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<sup>12</sup>The term Department of the Navy includes the Marine Corps. While there are differences between the Navy and Marine Corps in accounting procedures, both services follow the basic policies and instructions issued by the Comptroller of the Navy. Hereinafter the word Navy will include the Marine Corps unless otherwise indicated.



basis of engineer analysis provided by the public works or base maintenance officer.<sup>13</sup> The result of the foregoing is that the Navy housing cost system collects and reports estimated accrued costs without maintaining a formal accounts payable type ledger.

The five digit expenditure account number, commonly referred to as EAN, forms the basis of the Navy structure of accounts. EAN's classify expenditures according to the end use or purpose for which the expenditures are made.<sup>14</sup> It is apparent that EAN's perform a function almost identical to that performed by the Air Force control account numbers. However, there are many more EAN's than control account numbers and the former go into greater detail in identifying costs by end use. The EAN's pertinent to this paper are primarily those in the 44000 and 45000 series having to do with maintenance and operation of facilities. The examples shown in Exhibit 5 will help to identify the nature and function of EAN's.

While EAN's go into great detail in some cost areas they do not in themselves provide housing costs according to the housing categories and cost classifications required by the Department of Defense.

To comply with Department of Defense requirements the Navy must employ specific job orders to collect detailed costs. EAN 44551 (see Exhibit 5) will accumulate costs for the maintenance and repair of encumbered quarters but job orders are needed if total costs are to be broken down into the structural repairs, painting and interior utilities sub-classifications required by the Department of Defense. The job orders

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<sup>13</sup>U. S. Department of the Navy, NavCompt Instruction 11101.7A, 21 February 1963, enclosure 1.

<sup>14</sup>U. S. Department of the Navy, Navy Comptroller Manual, Volume II.





## Exhibit 5

SELECTED NAVY EXPENDITURE ACCOUNT NUMBERS  
AND THEIR TITLES

<u>EAN</u>	<u>Title</u>
44551	Maintenance of Encumbered Public Quarters
44567	" " Inadequate " "
44569	" " Family Housing Trailers
44570	" " Rental Housing
44568	" " Other Public Quarters
44731	" " Refuse and Garbage -- Collection and disposal facilities
44790	" " Lawns
45305	Refuse and Garbage Collection and Disposal Operations.



referred to here are groups of numeric indicators of which the EAN is a basic component. Other components may be an appropriation indicator allotment designator, cost center number and job order number.

It can be observed that there is no Navy-wide job order number structure. In fact, job orders vary between installations as to the number of digits and the order of their appearance. Hence, the Navy account structure is not adaptable to Navy-wide machine processing for costs that cannot be collected directly by EAN's. An installation may have a data processing program to handle its own job order system, but consolidation of installation reports at the next higher command level by machine methods does not appear possible.

#### Cost Reporting in the Military Departments

As might be anticipated from the foregoing descriptions of the departmental accounting systems, both the Air Force and Army employ machine accounting procedures in preparing, submitting and consolidating housing cost reports. Reports from Air Force and Army installations are submitted to the next higher command level for consolidation and further submission to departmental headquarters. The format of the report received at Air Force Headquarters is shown on Exhibit 6. These data are provided in sufficient detail to permit a comparison of performance between different installations within a given senior command. Practically the only feature the Air Force and Army reports have in common is that they are both submitted in a mechanized format. The Army report format, shown in Exhibit 7 provides summary data at the senior command (CONARC, medical Corps, etc.) level, with the result that its contents are in



Exhibit 6

AIR FORCE MECHANIZED FORMAT FOR HOUSING COST REPORTS<sup>a</sup>

Base Name	Civilian Marhours	Civilian Cost	Contract Service	Base Proc. Material	Other	Military Manhours Cost	Total Cost	Quantity	Unit Cost
1100		ADMINISTRATION							
TYNDALL	XXX	\$XXX	\$XXX	\$XXX		XXX	\$XXX	XX	XX
PERRIN	XX	XXX	XXX	XXX	XX	XXX	XXX	XX	XX
1200		MAINTENANCE AND REPAIR DWELLING UNIT							
TYNDALL	XXX	XXX	XXX	XXX		XXX	XXX	XX	XX
PERRIN									
1201		STRUCTURES							
TYNDALL									
PERRIN									
1202									SQUARES

( THIS LISTING WOULD CONTINUE THROUGHOUT THE ENTIRE HOUSING ACCOUNT CODE SERIES )

<sup>a</sup>Source: Air Defense Command quarterly family housing cost report as of 31 March 1963.



Exhibit 7

ARMY MECHANIZED FORMAT FOR CONSOLIDATION HOUSING COST REPORTS

AGENCY	ACTUAL 1	2ND QTR 2	3RD QTR 3	4TH QTR 4	ACTUAL 5	2ND QTR 6	3RD QTR 7	4TH QTR 8
1910.								
200 CON				PF-NONE	\$XXX	\$XXX	\$XXX	\$XXX
300 EUC								
400 PAC								
1910.1								
200 CON				ENCUMBERED HOUSING PF-NONE	\$XXX	\$XXX	\$XXX	\$XXX
1910.11								
200 CON	XX	XX	XX	ADMINISTRATION PF-HOUSING UNITS XX	\$XXX	\$XXX	\$XXX	\$XXX
1910.12								
	XX	XX	XX	SERVICES PF-POPULATION XX	\$XXX	\$XXX	\$XXX	\$XXX
1910.13								
				UTILITIES OPERATIONS PF-NONE				

Source: First quarter, FY 1964, Cost and Performance Summary Military Family Housing, Army. (The first quarter figures are actual figures, the other quarters are projections. The report for the second quarter would show actual figures for the first and second quarters with projections for the third and fourth quarters, etc.) The listing would continue throughout the entire housing account series.





formation rather than management oriented. The only level receiving installation reports is the level between the senior command and the installation.<sup>15</sup> In the event an installation does not have a data processing center the report is key punched at the next higher headquarters.<sup>16</sup>

Navy housing reports are manually prepared on NavCompt Form 2100, shown as Exhibit 8 and are submitted from the installation to the Bureau of Yards and Docks, via the Naval district. As can be observed, the Navy form 2100 provides a great amount of detailed information all of which must be manually processed. Evaluation is at best difficult.

Marine Corps housing reports for Marine Corps managed installations also are manually prepared and submitted on NavCompt Form 2100.<sup>17</sup> The reports are submitted directly from the installation to Headquarters, Marine Corps with no intermediate command level involved. At Headquarters, Marine Corps the data on the reports is key punched and machine listings prepared for the housing manager.

Installations in all three departments are required to submit quarterly housing cost reports. Each military department is required to

<sup>15</sup>Information obtained during an interview with Mr. Joseph West, Head of the Budget and Accounting Branch, Family Housing Division, Corps of Engineers, U. S. Army Headquarters.

<sup>16</sup>In the Army there are two intermediate levels between the installation and department headquarters, i.e., installation -- Army Headquarters (6th Army) -- Continental Army Command -- departmental headquarters. The Air Force and Navy have one intermediate command level, such as the Air Material Command and Naval District headquarters.

<sup>17</sup>Marine Corps Air Stations are managed by the Bureau of Yards and Docks and the housing reports are submitted through Navy channels.



submit consolidated semi-annual reports to the Secretary of Defense.

The foregoing reporting procedures have been described to provide a base for subsequent discussion of the type management data now provided by the cost accounting systems. Because one department's report provides more or less information than another's is no reflection on the management proficiency of either department. The cost reports themselves are not looked upon as a measure of management, but as a tool to aid management in carrying out its responsibilities.

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# FAMILY HOUSING OPERATION AND MAINTENANCE COST REPORT

COMPT FORM 210D (5-62)

APPROPRIATION AND SUBHEAD	BUREAU CONTROL NO.	REPORTING PERIOD	CATEGORY OF HOUSING				<input type="checkbox"/> ENCUMBERED HOUSING <input type="checkbox"/> INADEQUATE PUBLIC QUARTERS AND RENTAL HOUSING <input type="checkbox"/> FUND HOUSING <input type="checkbox"/> ALL OTHER PUBLIC QUARTERS <input type="checkbox"/> ACCRUAL <input type="checkbox"/> EXPENDITURE <input type="checkbox"/> SUMMARY			
---------------------------	--------------------	------------------	---------------------	--	--	--	--	--	--	--

LINE NO.	COST CLASSIFICATION (1)	FUNDED COSTS					UNFUNDED COSTS			TOTAL COST (10)	UNITS OF MEASURE (11)	UNIT COST (12)
		CIVILIAN LABOR (2)	OVERHEAD OR LABOR ACCELER. (3)	STOCK FUND MATERIAL (4)	PUBLIC VOUCHERS (5)	TOTAL FUNDED COST (6)	FRINGE BENEFITS (7)	EQUIPMENT USAGE (8)	MILITARY LABOR (9)			
*1	ADMINISTRATIVE											
1a	LEAVE AND FRINGE BENEFIT COSTS											
1b	EQUIPMENT - OPERATION AND MAINTENANCE											
2	MAINTENANCE AND REPAIR - DWELLING UNIT											
2a	STRUCTURE											
2b	PAINTING											
2c	INTERIOR UTILITIES											
3	MAINTENANCE AND REPAIR - OTHER PROPERTY											
3a	EXTERIOR UTILITIES											
3b	GROUNDS											
3c	SURFACE AREAS											
3d	OTHER											
4	SERVICES											
4a	REFUSE COLLECTION AND DISPOSAL											
4b	FIRE PROTECTION											
4c	POLICE PROTECTION											
4d	OTHER											
5	UTILITY OPERATIONS											
5a	ELECTRICITY											
5b	GAS											
5c	FUEL OIL											
5d	WATER											
5e	SEWAGE											
5f	OTHER											
6	FURNITURE AND EQUIPMENT											
6a	A. FURNITURE											
6a(1)	MAINTENANCE AND REPAIR											
6a(2)	HANDLING AND STORAGE											
6a(3)	INITIAL OUTFITTING AND REPLACEMENT											
6b	B. EQUIPMENT											
6b(1)	MAINTENANCE AND REPAIR											
6b(2)	HANDLING AND STORAGE											
6b(3)	REPLACEMENT (To housing inventory)											
7	CONSTRUCTION AND ALTERATIONS											
**TOTALS												

\* THIS LINE WILL NOT INCLUDE COSTS REPORTED ON LINES 1a and 1b

\*\* IN CROSS FOOTING THE TOTALS OF COLUMN (6) THROUGH (9) FOR CURRENT FISCAL YEAR APPROPRIATIONS ONLY EXCLUDE AMOUNTS EQUAL TO LINES 1a and 1b IN COLUMN (6).

	LESS CREDITS TO 47000 ACCOUNTS			
	NET FUNDED COSTS			
			NET UNFUNDED COST	



### CHAPTER III

#### EFFECTIVENESS OF THE FAMILY HOUSING COST ACCOUNTING SYSTEM

##### Control by the Department of Defense

Prior to discussing the effectiveness of the cost accounting system it would be well to bring forth certain facts about the family housing program in general. With the establishment of the Office of the Deputy Assistant Secretary of Defense (Family Housing) and the creation of the Family Housing Management account<sup>1</sup> and uniform cost accounting system, the Secretary of Defense assumed control of a portion of the military facilities management program to a degree heretofore unknown. Family housing was, in effect, isolated from other facilities and subjected to detailed surveillance by the office of the Deputy Assistant Secretary of Defense (Family Housing). Detailed instructions were issued to the military departments concerning programming new housing assets and assignment and utilization policies for existing assets.<sup>2</sup> As previously

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<sup>1</sup>U. S. Department of Defense Instruction 7150.4 of November 8, 1962.

<sup>2</sup>Programming instructions were issued in the form of various memoranda to the departmental secretaries; assignment and utilization was covered by DOD Instruction 4165.44 of July 18, 1963.





mentioned in Chapter II, the Secretary of Defense approved the recommendation of the Task Force on Accounting which required the military departments to submit semi-annual cost reports to the Office of the Secretary of Defense (OSD). The reports reviewed for fiscal year 1963 were analyzed by the staffs of the Assistant Secretary of Defense (Comptroller) and the Deputy Assistant Secretary of Defense (Family Housing), subsequently compiled in graphical form, and published to the military departments as shown on Exhibits 9 - 13. A brief glance at these five exhibits reveals a fairly wide divergence between the departments in some cost areas. If military departmental costs are to be so displayed and directly compared, it is essential that the costs be collected on a uniform basis and that the departments have at their disposal the means to evaluate the costs to prove both internally and externally that the costs are a result of the best possible management effort and proficiency.<sup>3</sup>

#### Uniformity of Costs

The detailed definitions developed by the Task Forces on Criteria and Accounting, concerning the cost components to be included in each cost classification, provide for a certain degree of uniformity. The problem is not primarily in determining what charges are to be included under such headings as administration or maintenance and repair, but in placing a value or perhaps a relative value, on these charges. There are

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<sup>3</sup>There is a strong likelihood that departmental costs will receive continually more detailed evaluation at the OSD level. Interviews with Mr. Leonard P. Lyons, Arthur Crap, and others of the staff of the Deputy Assistant Secretary of Defense (Family Housing) have revealed an increasing interest in departmental cost figures.



Exhibit 9

Family Housing Operation & Maintenance Unit Costs, Per Year,  
FY 1963

Chart A-2

ARMY - BY TYPE OF HOUSING

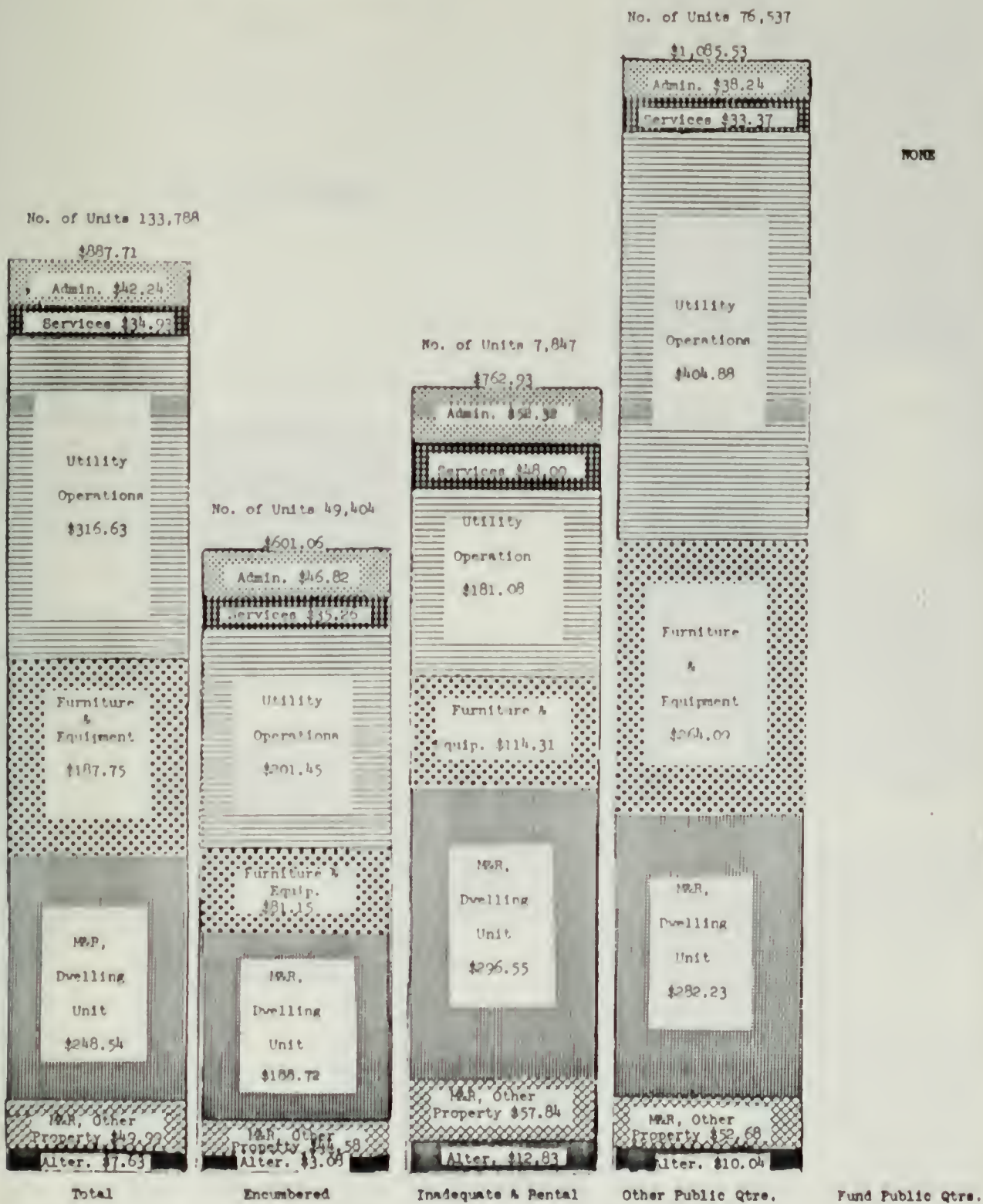




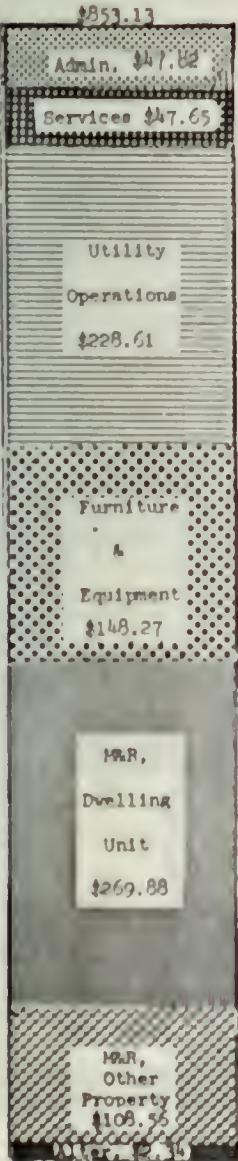
Exhibit 10

Family Housing Operation & Maintenance Unit Costs, Per-Year, FY 1963

Chart A-3

NAVY - BY TYPE OF HOUSING

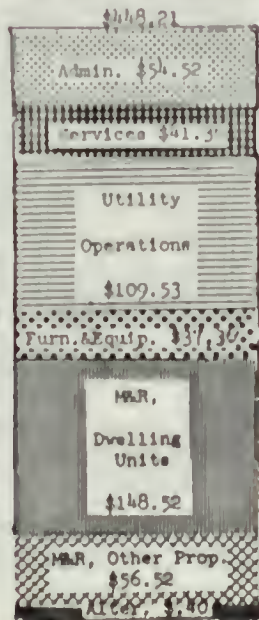
No. of Units - 72,331



No. of Units - 28,803



No. of Units - 23,257



No. of Units - 19,990



No. of Units

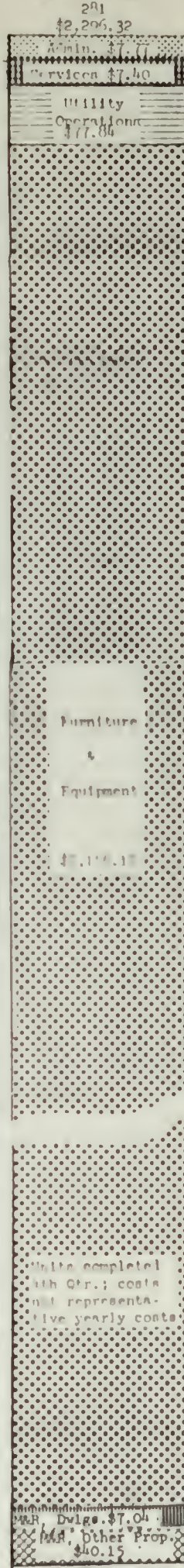








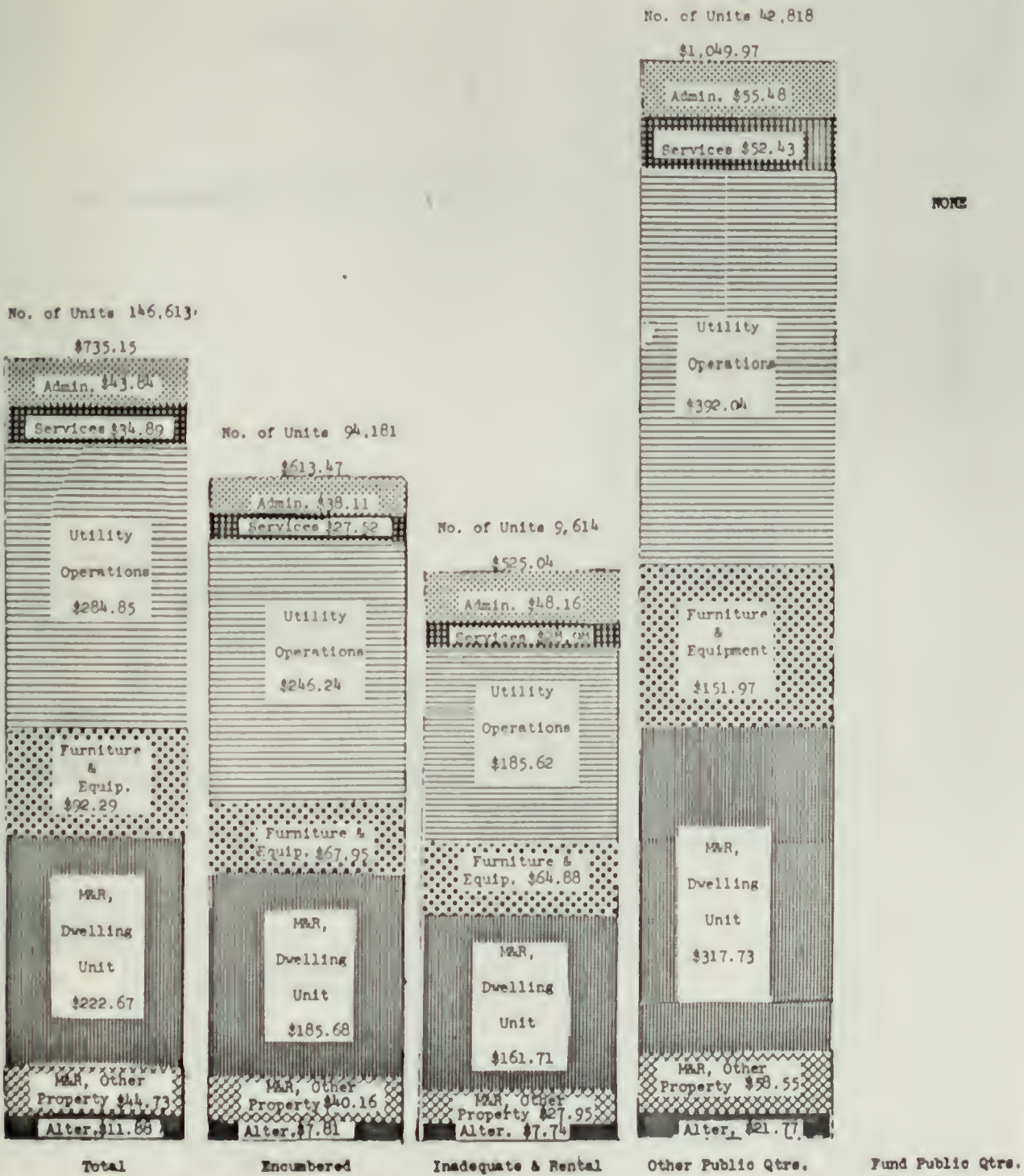


Exhibit 12

Family Housing Operations & Maintenance Unit Cost, Per Year,  
FY 1963

Chart A-5

AIR FORCE - BY TYPE OF HOUSING



NOTE



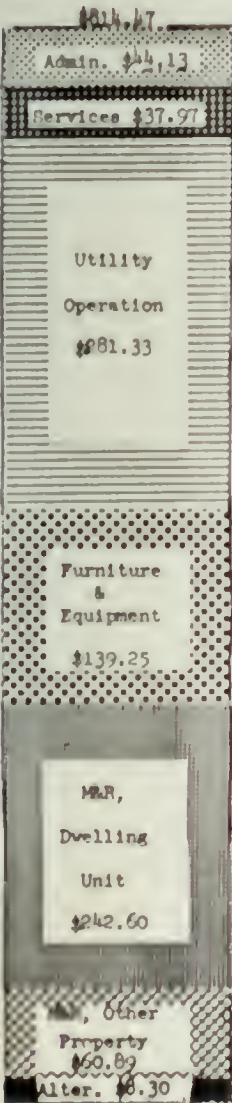
Exhibit 13

Family Housing Operation & Maintenance Unit Costs, Per Year.  
FY 1963

Chart A-1

DOD TOTAL ALL SERVICES & AGENCIES-BY TYPE OF HOUSING

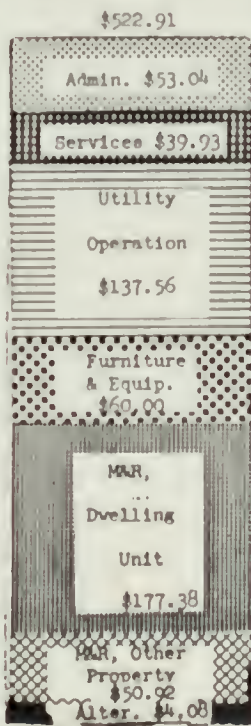
No. of Units 367,590



No. of Units 180,070



No. of Units 45,295



No. of Units 141,944



No. of Units 281



Units completed 4th Qtr.; costs not representative yearly costs.

M&R, Other Property \$40.15



three factors which create some uncertainty in valuing costs (1) Use of military labor (2) labor costs at industrial funded activities and (3) the distribution of overhead at appropriation funded installations.

#### Military Labor

There is no intent here to question either the use of military labor for the operation and maintenance of housing or the hourly rates used. The first is beyond the scope of this paper and the second prescribed by the Department of Defense.<sup>4</sup> The point in question is the amount of military labor used by each department and the effect on total costs. According to congressional testimony given by representatives of the military departments, fiscal year 1964, military labor costs for housing Operations and Maintenance were expected to be:

Air Force	\$10,194,000
Army	4,050,000
Navy	717,000 <sup>5</sup>

The overall cost of military labor averages out to be approximately \$1.50 per hour.<sup>6</sup> The average hourly rate for civilian labor is much higher, approximately \$3.00 per hour or about double the military rate.<sup>7</sup> The

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<sup>4</sup>U. S. Department of Defense, Assistant Secretary of Defense (Comptroller) memorandum of February 2, 1951 to the secretaries of the military departments.

<sup>5</sup>U. S. Congress, 88th Congress, 1st Session, op. cit., pp. 170, 180, 352 and 463.

<sup>6</sup>U. S. Department of the Army, AR 35-247.

<sup>7</sup>U. S. Department of the Navy, Personnel of the Naval Shore Establishment, Vol, 20, No. 4, Office of Industrial Relations. The \$3.00 rate does not include overhead charges.



conclusion is almost self-evident; extensive use of military labor should result in lower per unit costs, provided all units involved in the comparison are maintained at the same level of maintenance. The disparity between military and civilian labor becomes even greater when industrial funded activities enter the picture.

#### Industrial Funded Activities

Family housing is located at 41 Navy and 17 Army activities that are managed on the basis of industrial funding.<sup>8</sup> The Air Force apparently has no such activities. The significance of industrial fund accounting lies in the overhead costs which are considerably higher than those at appropriation funded installations due to the requirement for industrial funded activities to include all overhead, both direct and indirect, into the computations. The result is that industrial fund labor rates including overhead range from \$4.75 to \$8.00 per hour as compared to the \$4.00 (\$3.00 + 24%) figure for regular civilian labor and \$1.50 figure for military labor.<sup>9</sup> It can be concluded that housing Operations and Maintenance costs at industrial funded activities are inherently higher than at other installations, especially at installations using a large amount of military labor.

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<sup>8</sup>Figures obtained from Cdr. W. B. Stephenson, Family Housing Division, BuDocks and Mr. Joseph West, Head of the Budget and Accounting Branch, U. S. Department of the Army, op. cit. The Navy figure of 41 may be somewhat conservative for some of the activities reflected therein are Public Works Centers which serve more than one installation.

<sup>9</sup>Industrial fund labor rates were obtained from Cdr. C. E. Diehl, Assistant to the Director of Programs and Comptroller, Bureau of Yards and Docks.





The Distribution of Overhead Charges at  
Appropriation Funded Installations

The distribution of overhead charges at appropriation funded installations affects uniformity of costs in quite a different way. Current Department of Defense instructions on assignment of overhead to civilian labor applied to family housing are as follows:

Labor

- (1) Civilian. Actual payroll costs of civilians engaged in family housing activities. Civilian labor is represented by those civilians including full-time assignments to family housing and distributed to family housing at a single installation. Labor costs to include 24% for annual leave, sick leave, contribution for life insurance, retirement, etc. (Underlineation mine.)<sup>10</sup>

The problem is not so much with the 24% rate but with to whom it is applied. Both the Army and the Navy apply the 24% factor only to the labor of employees who are not assigned to housing on a full time basis, such as maintenance personnel working out of the installation maintenance office. Personnel such as the housing director and his office staff and any others who may be charged 100% to housing are directly costed to housing without application of the 24% overhead charge. The Air Force, however, applies the 24% rate to all labor charges regardless of how personnel are assigned.

It may be that the difference between the overhead costs included in the total wages directly charged to housing and the 24% rate applied to other labor is not significant dollar wise but, the inconsistency

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<sup>10</sup>Task Force on Uniform Accounting Procedures, op. cit. p. 17.



raises another doubt as to the uniformity of costs collected in the departments.

Except for the last item discussed, that of the 24% overhead factor, the point of the discussion of uniform costs is not to remove the non-uniformity but to properly recognize that it exists. Military labor will continue to be used and industrial funded activities will continue to exist. However, it is not appropriate to compare performance, cost wise, of installations subject to such a wide range of labor costs. These cost factors assume greater importance when developing DOD-wide or military department-wide cost standards; a subject to be discussed later in this paper.

### Relationship of Cost Accounting

#### To Management

According to the General Accounting Office the basic purpose of accounting is as follows:

The fundamental purpose which underlies the accounting of a Federal agency is to discharge the inherent management duty to render an accounting for the resources and operations for which it is responsible and to provide information necessary for effective and economical management of such resources and operations. This duty requires the maintenance of a suitable system of financial and related records from which needed information on resources, liabilities and obligations, revenues, and costs can be obtained and reported for the information and control use by appropriate levels of management; other agencies and authorities having control responsibilities; the Congress; and ultimately, the public. (underlineation mine)<sup>11</sup>

Assuming the above definition by the General Accounting Office to be reasonably adequate and accurate, how does the family housing

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<sup>11</sup>U. S. General Accounting Office, Illustrative Accounting Procedures for Federal Agencies, 1962.



cost accounting system measure up to the demands, or requirements, contained therein? Chapter I showed that the cost classifications and housing categories in use provide a sufficiently detailed breakdown of costs and Chapter II demonstrated the existence of account structures that are capable of collecting costs, and reporting procedures to make the cost data available to all levels of management for control use. Up to this point the system measures up well. But what takes place from this point on? Is the cost data actually used for management purposes? Is it used at all?

Extensive interviews with personnel at Air Force and Army departmental headquarters and in the Bureau of Yards and Docks indicated that cost information receives minimal analysis in relation to the potential management value it represents. Cost reports were used more for determining or verifying expenditure totals rather than for evaluating the appropriateness of individual costs. The small benefit derived is due, not so much to a lack of time and effort spent on cost analysis by people working in departmental budget and accounting offices, for these people appeared to devote as much time to this area as their other requirements and responsibilities permitted, but to the vast amount of detailed bits of information generated by the accounting system and the way in which it is presented for review. These factors are described below.

#### Cost Report Format

The cost reports received by the Air Force come closest of all in providing readily usable management data. As shown on Exhibit 6, the report provides detailed installation reports by cost classification



and housing categories and shows the number of work units involved. However installations are grouped by major command and a consolidated report submitted by each major command. Comparison of costs between installations within different major commands becomes somewhat cumbersome and time consuming.

Navy cost reports also provide detailed data by installation, but as mentioned in Chapter II, the reports are manually prepared with a separate sheet for each housing category at each installation. The Navy has 230 installations, each of which operate at least one category of family housing.<sup>12</sup> Recalling that there are four categories of housing, it is easy to see that the number of individual pieces of paper coming into the Bureau of Yards and Docks each quarter will range between 230 and 920. Considering the amount of detail on each Form 2100, the number of man hours required to properly analyze the quarterly submissions is probably not available in the Family Housing Division of the Bureau. If the quarterly reports are not properly evaluated the question arises as to why they are required to be submitted so frequently.

Army cost reports, as now submitted, provide practically no information that can be used for an authentic cost analysis. The Army account structure and mechanized procedures contain the means to provide this information, but for some reason the Army has not seen fit to capture it, at least at the department headquarters level. The major command consolidations provide total expenditure figures, which, as a measure of performance, offer limited value.

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<sup>12</sup>Obtained from Cdr. W. B. Stephenson, op. cit.





## Information Selection or Problem

## Identification

It can be observed from the above analysis of cost reports that the report formats could stand improvement. Suppose now that the reports were improved to the point where they provided all the basic detailed information required for performance evaluation and that the reporting cycle remained quarterly. The result would be such a volume of information that the departments would have to hire additional analysts to digest it; an unlikely occurrence in light of the continuing efforts to reduce personnel costs in the Federal Government. The following facts will give substance to the above statement concerning a volume of data. The Air Force manages 295 installations that have family housing, the Army 241 and, as previously mentioned, the Navy 230.<sup>13</sup> Contained in the seven major housing individual cost classifications are about 30 individual cost items and sub totals that have to be considered for each housing category. A little playing around with multiplication will easily produce a grasp of the large number of cost data bits that could be looked at. For instance if the number of housing categories at Air Force installations averaged only two, the total number of basic data bits would be 21,300 (60 X 295). If each cost bit is further broken down into its labor and material components, as is the case in the Air Force, the amount of data becomes unmanageable for manual procedures. What is needed is a method of rapidly sifting through the mass of data

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<sup>13</sup>Information for Air Force obtained from Mr. William Wilson, AFOCE, bldg. T-8, Washington, D. C. and for Army from Mr. Joseph West.

INFORMATION CONCERNING THE

MILITARY

(If the information is to be used for the purpose of the

Military Service Act, 1917, the information should be furnished to the

Secretary of State for War, and not to the War Office.)

The information should be furnished in the form of a letter, and should

be signed by the person who is the source of the information.

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and extracting only those items which deviate significantly from some predetermined standard. What is needed is Automatic Data Processing (ADP). The application of ADP to the family housing cost accounting system will be discussed in Chapter IV as will the determination and application of cost standards.

#### Management at Different Command Levels

Before leaving the discussion of cost accounting in relation to management a few observations about the various management levels are in order. Discussion so far has centered upon the cost reports received at the departmental headquarters and their use at that level. While top level review of cost and performance information is essential to proper surveillance and overall control, it must be recognized that actual management takes place at the installation. Here is where the houses get built, lived in, and maintained. It follows then that cost reports should provide maximum benefit to the installation commander and his staff in providing them with the means to review their own performance.

Next in line comes the immediate senior command where installation reports are received, analyzed (?) and consolidated for submission upward.<sup>14</sup> This is the first point at which a comparative analysis of performance at different installations can be conducted and this fact brings to light a worthwhile question. Why must consolidated cost reports

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<sup>14</sup>The existence of more than one intermediate command level having a management responsibility is subject to question for it leads to duplication of effort, excessive overheads costs and delay in responsiveness.

The first thing I noticed when I stepped out of the plane was the fresh air. It felt like I had been in a bubble for the last few hours. The sun was shining brightly, and the birds were chirping. I took a deep breath and felt a sense of relief. I had finally reached my destination. I looked around and saw a beautiful landscape. The mountains were in the distance, and the fields were green. I felt like I had found a new world. I walked towards the town and saw people everywhere. They were all smiling and waving. I felt like I had been welcomed. I took a taxi to my hotel and checked in. I felt like I had found a new home.

### My Journey to the Mountains

I had always wanted to visit the mountains. I had heard so much about them. They were supposed to be beautiful and peaceful. I had read books and seen pictures. I had always dreamed of seeing them. I had finally decided to go. I had saved up my money and had everything ready. I had bought my tickets and had my luggage packed. I had said goodbye to my family and friends. I was ready to go. I had finally reached the mountains. I was standing in front of the mountains. They were so beautiful. I had never seen anything like them before. The mountains were so tall and so green. I felt like I had found a new world. I had finally reached my destination. I took a taxi to my hotel and checked in. I felt like I had found a new home.

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flow only upward? If intermediate level analysts are interested in comparing installation performance figures why would not the installation commander be interested in comparing his own performance with that of other commands in his geographical area or command group? In this sense cost reports could provide a degree of feedback that is not now available.

Finally, the departmental level enters the picture at a point where it is possible to compare performance on a service-wide basis. Here is where help is most needed if cost analysis is to be anything more than superficial.



## CHAPTER IV

### USE OF AUTOMATIC DATA PROCESSING IN COST ACCOUNTING IN MILITARY FAMILY HOUSING

It is not the intent of this chapter to design a "computerized" system for the collection, reporting and analysis of family housing operation and maintenance costs. Such a task must be relegated to management, accounting and systems personnel who are actively involved in the housing program. What will be attempted is to demonstrate that computers can play an important part in improving the existing cost accounting system in areas of data manipulation and selection and in the determination of cost standards.

The ideas and concepts contained herein are not particularly original with the author nor do they represent a wide variance from current thinking within family housing management circles within the Department of Defense.

#### The Burch Study

During the summer of 1963 Commander B. F. Burch, U.S.N. was assigned to the Office of the Deputy Assistant Secretary of Defense (Family Housing) and given the general task of seeking to improve the cost accounting system through the application of computer techniques. Cdr. Burch assigned himself the specific tasks of (1) determining





statistically defensible cost standards for each of the cost categories established by the Family Housing Management Account Cost System and (2) developing techniques for analyzing massive amounts of data quickly and accurately so that the cost accounting system can be used more efficiently by the higher executive levels.<sup>1</sup>

The study employed the statistical analysis method known as Frequency Distribution Analysis. Cost data were grouped according to range, and estimates of the mean and standard deviation from the mean were developed. To avoid the necessity of using cost data from all military installations, the principle of statistical sampling was employed. Cost data were taken from 40 Army, 60 Navy and 60 Air Force installations selected at random. The number of installations per department was calculated to provide the best mix by housing categories.

According to Cdr. Burch the study, if manually done, would have involved several hundred hours of manual calculation by a trained analyst to prove the system and develop the figures required. However, by using a computer calculations were made rapidly and accurately and equally as important, the resulting print out was in a form suitable for immediate use.<sup>2</sup> An even more significant point was that, due to the rapidity of the computer, estimates were unnecessary and actual means and standard deviations were computed. The result was a modification of the classic frequency distribution analysis procedure.

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<sup>1</sup>The foregoing and subsequent information about this study was obtained through a series of interviews held with Cdr. Burch during February and March 1964.

<sup>2</sup>Cdr. Burch had an IBM 7090 at his disposal.



The Burch study produced tangible and valuable results in the area of cost standards. These standards were accepted by the Deputy Assistant Secretary of Defense (Family Housing) and subsequently sent to the Secretaries of the military departments for comment on their pending adoption and use.<sup>3</sup> The cost standard figures generated and published are shown as Exhibit 14. As can be observed, cost standards were developed for only 3 housing categories with the appropriated fund category omitted. The omission was due to the small number of such quarters constructed to date and the resultant lack of cost figures.

As a by-product of the work performed on cost standard development, the study produced various types of listings of data that offer potential value to cost analysts at all levels of management. These listings demonstrated the versatility resulting from the application of computer methods to great quantities of cost data.

The following discussion will center on the application and refinement of cost standards, the use to which these standards can be put, and to potential value contained in data manipulation through computer techniques.

#### Cost Standards

The cost standards developed and issued by the Department of Defense represent a positive step in the right direction in that they provide, for the first time, a tangible reference point against which performance can be compared and measured. However, it must be kept in

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<sup>3</sup>Deputy Assistant Secretary of Defense (Family Housing) memorandum of 31 March 1964 to the Assistant Secretaries for Installations and Logistics of the Army, Navy and Air Force.



## COST STANDARDS FOR O&amp;M OF FAMILY HOUSING

(Dollars/Unit/Year)

Cost Category	ENCUMBERED			INADEQUATE			OTHER PUBLIC QUARTERS		
	Low Limit	Standard	High Limit	Low Limit	Standard	High Limit	Low Limit	Standard	High Limit
<u>Administrative</u>	22	42	64	25	50	75	17	50	72
<u>Maint. &amp; Repair - Dwelling Unit</u>	97	174	251	47	162	267	319	619	949
Structure	25	74	113	12	82	152	115	298	481
Painting	16	55	94	10	35	60	77	205	333
Interior Utilities	17	45	62	10	45	80	54	116	178
<u>Maint. &amp; Repair - Other Property</u>	17	54	91	10	41	72	25	109	190
Exterior Utilities	4	16	28	4	11	18	5	31	57
Grounds	5	24	43	6	16	30	16	52	88
Surfaced Areas	0	6	13	1	6	11	1	6	11
Other	0	8	13	2	8	14	5	20	40
<u>Services</u>	19	33	47	19	33	47	10	53	97
Refuse Collection & Disposal	11	21	31	11	21	31	11	33	43
Fire Protection	-	-	-	-	-	-	-	-	-
Police Protection	-	-	-	-	-	-	-	-	-
Other	2	9	18	2	9	18	5	20	35
<u>Utility Operations</u>	158	250	342	58	158	258	175	314	453
Electricity	51	115	179	27	72	117	62	116	170
Gas	41	84	127	13	47	81	28	76	124
Fuel Oil	28	71	114	19	69	129	49	122	195
Water	8	24	40	5	19	33	11	32	53
Sewage	3	12	21	3	12	21	3	15	24
Other	-	-	-	-	-	-	-	-	-
<u>Furniture and Equipment</u>	30	65	100	11	49	87	62	127	192
Furniture	8	38	68	8	28	48	38	80	122
Maint. and Repair	8	17	34	2	14	28	10	40	70
Handling and Storage	4	17	40	2	15	29	5	25	45
Initial outfitting & Repl.	-	-	-	-	-	-	7	27	47
Equipment	10	27	44	2	19	36	9	47	85
Maint. and Repair	5	17	29	2	14	27	11	37	57
Handling and Storage	-	-	-	-	-	-	-	-	-
Replacement	-	-	-	-	-	-	-	-	-
Total	428	618	808	315	503	691	422	1272	2122



mind that these cost standard figures are a first attempt and careful consideration must be given to their application "across the board." This understanding did not appear to be lacking within the OSD, for the memorandum that published the standards stated that the figures were an initial effort representing a start in the development of cost standards.<sup>4</sup> If this understanding is truly held, future refinement of the cost standard offers real promise.

There are two important factors that must be considered when developing and applying cost standards to family housing facilities. There are no indications that these factors have been fully explored to date. The first in the determination of labor charges at various types of installations and the second the fairly wide divergence in structural characteristics of the housing units within the Other Public Quarters housing category. The wide variance between labor costs at installations making extensive use of military labor and at industrial funded installations was discussed in Chapter III.

#### Labor Charges

The inclusion of industrial fund costs into cost standard computation cannot help but cause distortion and result in greater difference between upper and lower cost limits. Two things can be done to avoid this; industrial fund costs can be excluded from the overall cost standards and separate standards computed for only these activities or an adjustment factor can be applied to the actual cost reports prior to comparison against overall cost standards. Of the two possible courses of action the computation of separate industrial fund standards might prove best

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<sup>4</sup>Ibid.

The first part of the report deals with the general situation in the country and the progress of the work during the year. It then goes on to discuss the various projects and the results achieved. The second part of the report deals with the financial position and the budget for the next year. It also discusses the personnel and the equipment available.

The following table shows the results of the work during the year.

The table shows that the work has been carried out in accordance with the programme of work approved by the Council. It also shows that the financial position is satisfactory and that the budget for the next year has been approved. The personnel and the equipment available are also satisfactory.

Conclusions

The work has been carried out in accordance with the programme of work approved by the Council. It has also been carried out in accordance with the budget approved by the Council. The personnel and the equipment available are satisfactory.



for such action would "purify" the overall standards and make them more applicable to non-industrial activities. The identification and exclusion of industrial activities should prove to be no problem in a computerized cost system.

There is likely to be some distortion and widening of cost limits caused by military labor as compared to civilian labor. If this distortion proves to be significant an adjustment factor would have to be used, for there would be great difficulty in isolating stations using military labor on a large scale.

#### Structural Characteristics

The four housing categories now in use were established to provide a maximum breakdown of costs by type of housing with a minimum of additional administrative workload. To provide costs by type of housing by structural design would entail an administrative effort far beyond the benefit that could be derived. The housing units found in the encumbered, inadequate, and fund categories are not sufficiently different within their respective categories to cause a great problem, but the fourth category, other public quarters, consists of a real mix. In this latter category the units vary from small 2-bedroom units that barely meet standards of adequacy to huge 5 or more bedroom two story units that are predominately occupied by commanding officers and flag officers. A good proportion of these large units were built in the latter 19th century and early 20th century when housing architecture leaned heavily toward size and complicated exteriors and interiors. It can be deduced that there will be no small difference in the costs of structural maintenance

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### APPENDIX

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between housing units at opposite ends of the scale. The difference between the high and low limits shown on Exhibit 14 under other public quarters bear out this deduction.

With such a wide variance in unit cost figures it would seem that unit costs, in terms of housing units, provide a poor measurement device. A better device might be costs per square foot of interior floor space.<sup>5</sup> The amount of interior floor space in each housing unit is kept on installation plant account records and can be obtained. Use of floor space as a unit of measure would place all housing units, regardless of size, on a more equal footing. High and low limits would have more meaning. Such a measuring device would be clearly applicable to maintenance and repair of dwelling units cost classification. Whether or not it could apply to other cost classifications would have to be further studied.

#### Data Manipulation

As pointed out in Chapter III, one of the deficiencies of the existing accounting system lies in difficulties encountered in extracting meaningful data from cost reports. It will do little good to develop valid cost standards if the performance data is either not available or available in such a way that "The trees cannot be seen because of the forest." For the management analyst to place his sheet of cost standards on the desk in front of him and then proceed to go through numerous installation cost reports with a red pencil in hand is not an efficient procedure. Identification of deviations from a standard can be accomplished

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<sup>5</sup>The unit of measurement could be per 100 square feet or per 1,000 square feet.

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much more rapidly and accurately by computers and the results printed out in readily usable form. More time could then be devoted to finding out why the deviations existed instead of merely trying to locate them.

The use of computer methods need not be restricted to comparing performance figures against standards, for they are also capable of providing upper level managers with a much more penetrating analysis of what lies behind the cost figures in some areas. In the case where utility costs are determined through engineered estimate in lieu of metering, the validity of the estimates can be checked by comparing utility costs of different housing categories at the same installation. If these costs are widely different it is just as likely that the estimates are erroneous or outdated as to assume great differences in actual consumption.<sup>6</sup> The key to revealing such situations lies in having all cost figures on one sheet of paper so that the analyst does not have to search through many sheets. One listing for each utility showing installations down the left margin, and housing categories across the top could prove useful. Here again computers can perform a service in data selection and printout.

It would be somewhat monotonous to continue on trying to reveal individual situations where use of computer methods could help management analysts do their job. Suffice it to say that once the information is entered into the system, the output is a matter of programming to achieve the desired result.

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<sup>6</sup>Cdr. Burch encountered a few situations involving peculiar utility cost figures during his development of the cost standards.

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There is no desire or intention to create the impression that the application of automatic data processing methods to the military family housing cost accounting system will solve management problems. There is a definite desire and intent to espouse the theory that computer technology can be employed to better locate problem areas and thus facilitate their solution. There is also no desire to recommend the procurement of additional electronic computers just to serve the family housing program. It should be possible now, or at least in the very near future, to provide computer support to the housing program through existing equipment located at field installations, intermediate command headquarters and departmental headquarters.

#### Benefits for Fiscal Control and Budgeting

A cost accounting system adapted to automatic data processing methods can provide benefits in addition to those obtained through detailed cost analysis. With an accrual accounting system in use the computer could match quarterly expenditures against funds allotted to provide a reading on expenditures as a percentage of total or quarterly funds allotted.<sup>7</sup> Housing funds given out in two separate allotments; one for operations and one for maintenance and repair. The cost classifications in use can provide a separate printout of costs applicable to each allotment.

The value of the above allotment -- cost relationship lies in providing upper level managers with a ready means to measure an instal-

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<sup>7</sup>It would be necessary to distinguish between expenditures against prior year funds from current expenditures. The accounting system now provides this feature.

and the other side of the mountain range.

The mountain range is composed of several peaks.

The highest peak is the one on the right.

The mountain range is very beautiful.

The mountains are very high.

The mountains are very green.

The mountains are very tall.

The mountains are very wide.

The mountains are very long.

The mountains are very old.

The mountains are very young.

### THE MOUNTAIN RANGE

The mountain range is very beautiful.

The mountains are very high.

The mountains are very green.

The mountains are very tall.

The mountains are very wide.

The mountains are very long.

The mountains are very old.

The mountains are very young.

The mountains

The mountains are very beautiful.

The mountains are very high.

The mountains are very green.

The mountains are very tall.

The mountains are very wide.



lation's performance in terms of planned requirements. It is assumed that budgets are planned and prepared according to funds needed to meet requirements during given time periods throughout the fiscal year. Funds allotted should be spent at some fairly uniform rate, at least to the extent that there is not a disproportionate buildup of unliquidated obligations at the end of the fiscal year. The procedure described above would provide a readily accessible reading of unliquidated obligations as a measure of the work to be performed in the new fiscal year with prior fiscal year funds.

The procedure described above is possible; whether or not it will prove to be feasible will have to be determined by measuring the value of the product against the time effort and cost refunded to produce it. In any event it is worthy of consideration as an adjunct to an automated cost system.



## CHAPTER V

### SUMMARY AND CONCLUSIONS

In order to provide coordinated substance to the contents of the foregoing chapters of this paper, a hypothetical cost accounting system adapted to automatic data processing methods will be described. This system will be based upon the following assumptions which are essential to its existence.

1. That each military department has a standardized structure of accounts. As previously shown the Army and Air Force do have such a structure; the Navy does not.

2. That costs collected are accrued costs representing actual work performed and services received. This method of accounting is considered essential to real performance measurement. Army and Air Force regulations state that accrual accounting will be employed; Navy does not collect accrued costs but attempts to provide a close estimate of work performed and services received.

3. That most military installations especially major installations, and all intermediate and departmental command levels are either EAM or computer supported. Minor installations can have manual reports key punched at the next higher command level. Although an actual "nose count" was not undertaken for this paper it is believed that practically



all, if not all, major installations have at least an EAM capability which encompasses material issue, civilian payroll, allotment accounting and some cost accounting functions.

#### The System

1. At the installation, accrued material and labor costs (including overhead) are directly recorded on punch cards with utilities and other service costs and accrued contract charges punched in as required.

2. Quarterly cost reports (monthly at the discretion of the installation commander to meet allotment accounting or other needs) are prepared by EAM or computer methods for review by appropriate staff members.

3. Information on the cards or tape used to prepare the installation report is transceived (Tapes can be mailed or otherwise sent in the absence of transceiver equipment.) to the next higher headquarters for preparation of report consolidation. Consolidated reports are prepared at intermediate command headquarters and data transceived to departmental headquarters. A copy of the consolidated report is returned to each installation for use in comparative analysis by appropriate installation staff members.

4. At departmental headquarters the cost data is consolidated and a detailed report showing costs by installation, housing category and cost classification is prepared for general reference and matching against allotments. All data is then compared to cost standards, by

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means of a pre-established computer program. Those costs exceeding high limits and below low limits are extracted for inclusion in a special exception report. The data will remain available to prepare any special listings required for additional analysis of any cost classification. The information in the system can then be used to prepare whatever reports are required to be submitted to the Department of Defense.

5. At the end of the fiscal year the data can be used to produce a new computation of cost standards. Departmental cost standards can be presented to the Department of Defense for review and possible adjustment of overall Department of Defense-wide standards if and when warranted.

If this type of cost system is to become a reality, a great amount of planning and coordination will be required. One action that must take place prior to developing such a system is a re-examination of existing cost criteria, cost classifications and housing categories. If such a system or any facet of it is put into effect it must rest on a solid base that will be unlikely to change. This re-examination cannot be accomplished by the staff of the Office of the Secretary of Defense alone; the military departments must participate and those who participate must be those who will have to grind out the implementing instructions and evaluate the results.

The ideas brought forth in this paper may appear to overstress the importance of cost accounting and reporting as a constituent part of a management system. This may be so, but the military family housing program is not getting smaller with the passing years and any program that now consumes close to half a billion in annual operation and main-

the first of the two main parts of the book.

The first part of the book is devoted to the

study of the various forms of the verb.

The second part of the book is devoted to the

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The twelfth part of the book is devoted to the

study of the various forms of the verb.

The thirteenth part of the book is devoted to the

study of the various forms of the verb.



tenance dollars deserves to be operated on a businesslike basis. Knowing where and for what the money goes is essential to the proper conduct of any business.



APPENDICES



## APPENDIX I

### TYPES OF FAMILY HOUSING PROGRAMS

- LANHAM (P.L. 76-849)** - Constructed by PHA prior to and during World War II, primarily of temporary type; after the war transferred to local authorities and military as low cost rental housing. Designated as inadequate public quarters in 1962.
- PUBLIC LAW 671/76** - Constructed as permanent rentals by PHA and military for World War II, substantially superior to Lanhams. Operated as rental housing.
- RENTAL GUARANTY** - Built in France and Morocco by private sponsors under U. S. contract, guarantying sponsor specified rental income for specified period. During 1953-1956, 5,538 units were built in France and Morocco under this program. FY 64 MCA law (Public Law 88-174) authorized a new program of a maximum of 5,000 units with guaranties up to 10 years, running up to 97% of rents averaging up to \$150 per unit per month, including cost of maintenance and operation.
- JELLEY HOUSING** - Built by military forces to replace overseas inadequate quarters. Limit of \$5,000 per unit for materials and equipment. Occupied as public quarters.
- TRAILERS** - Acquired during World War II and the Korean Conflict; most have been disposed of; balance (approximately 3,000) located in U. S. and possessions occupied as rentals. Other units were acquired under P.L. 765/83 for use overseas; overseas units (approximately 2,200) are presently in France, United Kingdom, Turkey, Libya and Crete. Operated as rental housing.
- SURPLUS COMMODITY** - Built in foreign countries with currencies obtained from sale of surplus commodities; repayment to CCC is from quarters allowances withheld from occupants. Approximately 9,400 of these units built in United Kingdom, France, Japan, Morocco, Spain, Italy, Turkey, Pakistan and the Azores.
- FOREIGN SOURCE** - Mostly reparations of War housing. Inventory contains approximately 57,000 primarily Deutschemark housing in Germany and housing in Japan.



## APPENDIX I (continued)

DOMESTIC LEASING - Leased by government primarily at tactical sites in U. S. for occupancy as public quarters by key personnel. Limited to 5,000 units at an annual average monthly rental of \$160, including Operations and Maintenance.

FOREIGN LEASING - Approximately 1400 units leased, primarily in Germany. Also for Attaches' and missions' worldwide requirements. Administrative ceiling of 1439 units included for Fy 1964.

809 - Constructed by private enterprise under FHA-insured mortgages for sale to essential civilian employees at R&D installations; FHA may require Department of Defense to guaranty mortgage insurance fund against loss.

810 - To be constructed off-post under FHA-insured mortgage and occupied as rentals by military personnel and essential civilian employees of the military services and of defense contractors. No Department of Defense certification or guaranty required, but legislation enacted in November 1963 (P.L. 88-174) requires specific line item authorization in annual Military Construction legislation.

INADEQUATE PUBLIC QUARTERS - Certain units declared inadequate and occupied on an adjusted BAQ basis. FY 1964 MCA Law (P.L. 88-174) authorized continued use of these units for an indefinite period of time under specific conditions.

CHAPTER 2. THE STATE

The first chapter of this book is devoted to a study of the state as a political organization. It is a study of the state as a political organization, and it is a study of the state as a political organization.

The second chapter of this book is devoted to a study of the state as a political organization. It is a study of the state as a political organization, and it is a study of the state as a political organization.

The third chapter of this book is devoted to a study of the state as a political organization. It is a study of the state as a political organization, and it is a study of the state as a political organization.

The fourth chapter of this book is devoted to a study of the state as a political organization. It is a study of the state as a political organization, and it is a study of the state as a political organization.

The fifth chapter of this book is devoted to a study of the state as a political organization. It is a study of the state as a political organization, and it is a study of the state as a political organization.



APPENDIX II

Inclosure No. 4  
Appendix No. 2

SUGGESTED  
FAMILY HOUSING OPERATION AND MAINTENANCE COST FORMAT  
INSTALLATION LEVEL

Construction Category: Cost Classifications	Cost Elements					Other	Total Cost	Unit of Measure	Unit Cost
	Military Labor	Civilian Labor	S.P. Mat.	C.P. Mat.	Contracts				
1. Administration								No. Units	
2. MGR Dwelling Unit Structure Painting Interior Util.								No. Units M. Sq. Ft. Sq. Ft. --	
3. MGR Other Property Exterior Util. Grounds Surfaced Areas Other								-- -- Acres M. Sq. Yds. --	
4. Services Refuse Collection & Disposal Fire Protection Police Protection Other								-- Cu. Yds. No. Firefighters --	
5. Utility Operations Electricity Gas Fuel Oil Water Sewage Other								-- M. KWH M. Cu. Ft. M. Gal. M. Gal. M. Gal. --	
6. Furniture & Equipment a. Furniture Maint. & Repair Handling & Storage Initial Outfitting & Replacement b. Equipment Maint. & Repair Handling & Storage Replacement (to Housing Inventory)								-- \$ Inventory Value -- -- -- -- \$ Inventory Value -- -- --	
7. Construction & Alterations								No. Projects	

1.  $\frac{1}{x^2} = x^{-2}$   
 $\frac{d}{dx} x^{-2} = -2x^{-3} = -\frac{2}{x^3}$

## APPENDIX III

### DEFINITIONS

#### 1. Administration

Include all directly identifiable supervisory, administrative and clerical work in the installation engineer and family housing manager offices, office supplies, and other costs readily identifiable to family housing. This cost category should include the following types of costs: inspection, both pre-occupancy and post-occupancy; occupancy scheduling; scheduling of change of occupancy maintenance; billeting for family housing only; initial collections of rents and other charges; clerical assistance readily identifiable to family housing; financial planning, housing only; preparation of administrative reports; and other items such as utilities, supplies and other support.

Costs of an indirect nature, from the Engineers Office (Post Engineer, Public Works Officer, Base Civil Engineer), Comptroller's Office, Supply and/or Procurement Office, and other general station overhead, should be excluded.

Unit of Measure: Number of dwelling units.

TO (NAME)

(ADDRESS)

(CITY) (STATE) (ZIP)

(Faded text block, likely a letter body or form content)

(Faded text block, likely a signature or closing area)

(Faded text block, likely a footer or reference number)

## 2. Maintenance and Repair of Dwelling Unit

Includes the cost of maintenance and repair of all family housing buildings in real property codes 711 and 714.

Unit of Measure: Number of family housing units.

- A. Structure - includes all costs of maintenance and repair of dwelling units, except costs for all interior and exterior painting and costs for maintenance and repair of the interior electrical system, interior heating and/or cooling systems, and interior plumbing systems. The costs included shall be for the maintenance and repair of the building shell including roofs, walls, ceiling, floors, foundations, windows, doors, entrance steps, foyers, porches, carports, basements, etc. In multiple dwelling units, it shall include work done on all common spaces within the structure. EXCLUDE ALTERATIONS OR CONSTRUCTION.

Unit of Measurement: M. square feet floor area (gross).

- B. Painting - includes all interior and exterior painting, and the necessary surface preparation prior to painting, of the dwelling unit, house, and/or multiple dwelling unit building (including common spaces).

Unit of Measurement: Squares.

- C. Interior Utilities - include maintenance and repair of: the electrical system inside the building, including service entrance, meters, wiring, lighting fixtures, switches, main service panel, and miscellaneous electrical appurtenances attached as part of the structure; the heating

THE HISTORY OF THE UNITED STATES

The first part of the book is devoted to the early history of the United States, from the discovery of the continent to the establishment of the first colonies.

The second part of the book is devoted to the history of the United States from the beginning of the eighteenth century to the end of the eighteenth century.

THE HISTORY OF THE UNITED STATES

The third part of the book is devoted to the history of the United States from the beginning of the nineteenth century to the end of the nineteenth century.

THE HISTORY OF THE UNITED STATES

The fourth part of the book is devoted to the history of the United States from the beginning of the twentieth century to the present time.

system inside the building including furnaces, steam and/or hot water piping, radiators, thermostats, etc., and cooling systems such as evaporative coolers, central air conditioning, individual installed air conditioning units and heat pumps; the plumbing systems inside the building including hot and cold water piping, hot water heaters, sewage and drain lines, bath tubs, sinks, and other plumbing fixtures, and garbage disposal units. Do not include movable equipment such as kitchen ranges, refrigerators, freezers, dishwashers, clothes washers, clothes dryers, and similar household appliances since these items are included under "Furniture and Equipment."

Unit of Measure: None:

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SECTION 1

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SECTION 2

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